1. A recent national study showed that approximately 44.7% of college students have used Wikipedia as a

source in at least one of their term papers. Let X equal the number of students in a random sample of

size n = 31 who have used Wikipedia as a source.

Perform the below functions

1. Find the probability that X is equal to 17

Ans:

x = c(17)

pbinom (x,size = 31 , prob = 45)

[1] 0.8997136

b. Find the probability that X is at most 13

Ans:

x = c(1:13)

pbinom(x, size = 31, prob = 45)

[1] 2.356398e-07 3.017889e-06 2.502295e-05 1.510519e-04

[5] 7.078709e-04 2.682047e-03 8.450744e-03 2.261027e-02

[9] 5.221656e-02 1.055079e-01 1.887480e-01 3.022573e-01

[13] 4.379933e-01

c. Find the probability that X is bigger than 11.

Ans:

X = c(12:31)

pbinom(X, size = 31, prob = 45)

[1] 0.3022573 0.4379922 0.5807783 0.7131799 0.8215085

[6] 0.8997136 0.9494806 0.9773405 0.9910172 0.9968786

[11] 0.9990585 0.9997564 0.9999468 0.9999904 0.9999986

[16] 0.9999998 1.0000000 1.0000000 1.0000000 1.0000000

d. Find the probability that X is at least 15.

Ans:

X = c(15:31)

pbinom(X, size = 31, prob = 45)

[1] 0.7131799 0.8215085 0.8997136 0.9494806 0.9773405

[6] 0.9910172 0.9968786 0.9990585 0.9997564 0.9999468

[11] 0.9999904 0.9999986 0.9999998 1.0000000 1.0000000

[16] 1.0000000 1.0000000

e. Find the probability that X is between 16 and 19, inclusive

Ans:

X = c(16:19)

pbinom(X, size = 31, prob = 45)

[1] 0.8215085 0.8997136 0.9494806 0.9773405